

cooling 2-3 cm. zones of petioles and stems to a temperature of 2.5-3° C. In *Bryophyllum*, when such zones of the petiole are cooled, the broken correlation is manifested by development, not only in the notches of the leaf treated, but by development in the notches of the opposite leaf, as well as leaves both up and down the stem. The effect extends farther in the basal direction than in the apical. This indicates marked complexity in the correlation inhibitive effects. In *Phaseolus* the axial buds below the cooled zone grew. In *Saxifraga sarmentosa* the runner tip could be thus isolated. All of these results favor McCALLUM's view that correlative effects are brought about by conduction of stimuli, mainly inhibitory stimuli, and not by movements of materials.—WM. CROCKER.

Fermentation.—EULER and SVANBERG¹⁷ made a study of alcoholic fermentation in an alkaline medium in which $P=8$. Top yeast and *Torula* gave about equal weights of carbon dioxide and alcohol, each equal to 30-33d of the weight of the sugar fermented. Glucose, fructose, and invert sugar were fermented with about equal speed, mannose about 30 per cent as fast, and galactose very slowly. Invertase is active in this medium and maltase inactive. The following are the maximum alkalinities in which cell division occurs in the various yeasts: Froberg Unterhefe B., $P_H=7.7-8$; Brennerei Oberhefe S.B. II, $P_H=7.3-8.4$; *Sacch. ellipsoideus*, $P_H=7.9$; *Pseudosacch. apiculatus*, $P_H=7.6$. Increase in weight occurred in S.B. up to $P_H=8.5$. For Froberg Unterhefe H the full curve of acid sensitivity was worked out and the optimum was found to be at $P_H=5$.—WM. CROCKER.

Exudation of water by leaves.—Miss FLOOD¹⁸ has recently investigated the exudation of extremely pure water by the leaf tips of *Colocasia antiquorum*. Examination of sections of leaf tips showed no membrane, or other structure which might act as a filter, between the vascular system of the leaf blade and the pores leading to the tip. Solutions of India ink, gelatine, and starch were forced through the vascular system and exuded at the tips. Exudation from leaves attached to the plant continued at the normal rate when leaf tips were anaesthetized. Miss FLOOD is of the opinion that cells lower down in the plant are responsible for the secretion and filtration of water, but finds no evidence for the existence of such cells except in the root.—J. M. ARTHUR.

Colorado grasslands.—Reviewing the investigations of the grasslands of Colorado by himself and others, RAMALEY¹⁹ enumerates all the associations

¹⁷ EULER, H., and SVANBERG, O., Enzymatische Studien über Zuckerspaltungen. Hoppe-Seyler Zeit. Physiol. Chem. 105:187-239. 1919.

¹⁸ FLOOD, MARGARET G., Exudation of water by *Colocasia antiquorum*. Proc. Roy. Dublin Soc. (N.S.) 15: pls. 2. 1919.

¹⁹ RAMALEY, FRANCIS, Xerophytic grasslands at different altitudes in Colorado. Bull. Torr. Bot. Club 46:37-52. figs. 2. 1919.